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DEPARTMENT
OF
INDUSTRIES AND LABOUR

**QUARTERLY
BULLETIN**

ELECTRICAL

INSPECTION

BRANCH



OCTOBER - 1957

ELECTRICAL ACCIDENTS.

Three recent electrocutions from contact with 110/120 volts have emphasized the dangers presented by contact with so called "low voltage".

Following is a brief summary of these accidents which have all taken place during the last few months:

- (1) A farmer was preparing to use a portable electric drill. Although the drill was provided with a three-wire cord which incorporated a grounding conductor, a two prong cap only was connected to the end of the cord with the grounding wire being left unattached. The two prong cap was then plugged into an extension cord which in turn was connected to a receptacle in the residence.

A fault had occurred in the drill and when the victim pulled the trigger, which energized the drill, the frame of the tool also became energized. This resulted in a sufficient flow of current to cause his death.

- (2) A portable electric pump was being used to drain a sump. Again, the pump was connected without proper provision for grounding. The victim of this accident was standing in the water in the sump when the pump contacted him and he received the fatal shock.

Once again a fault had occurred in the machine or its connections which caused approximately 115 volts to appear on the frame of the pump.

- (3) A maintenance worker touched a terminal carrying approximately 120 volts while he was engaged in his routine duties and the resulting current flow through his body caused his death.

These accidents emphasize two very important points:

1. Electrical equipment must be properly grounded when used adjacent to ground or grounded surfaces.

2. So-called "low voltage" - in the order of 115 volts - should be treated with as much respect as higher voltages. It can kill just as easily under the right circumstances.

USE OF APPROVED EQUIPMENT AND MATERIALS.

Regulation 22 under the Electrical Protection Act requires all electrical equipment, apparatus, or appliances used in the Province to be of approved design and material. To comply with this Rule all such equipment and material must be approved either by the Canadian Standards Association or the Provincial Electrical Inspection Branch, and carry an approval marking.

Electricians are reminded that they should make sure that electrical equipment or material which they install complies with the above requirements. In cases where the above approval markings do not appear on equipment or material, the Inspection Department should be contacted before the installation is proceeded with.

REQUIREMENTS FOR UNDERVOLTAGE PROTECTION.

Several instances have been reported recently where low-voltage protection has not been provided in the motor control devices supplying motors on machine tools where automatic re-starting of the motors upon restoration of power would result in a hazard to the machine operators.

Whenever such a hazard is considered to exist, low-voltage protection must be provided and it is felt to be particularly important in such places as school work shops.

In these cases low-voltage protection must always be provided in accordance with Rule 28-038 of the Sixth Edition of the Canadian Electrical Code.

As permitted by Rule 28-040, the protection specified in Rule 28-038 may be applied to a feeder or branch circuit supplying a group of motors if desired, in which case individual motors need not be so protected. This would permit the installation of a contactor ahead of the distribution panel supplying machine tool motors.

GROUNDING OF NON CURRENT CARRYING METAL
PARTS IN BUILDINGS SUPPLIED FROM SERVICE
EQUIPMENT IN AN ADJACENT BUILDING.

There appears to be a general impression that the neutral conductor may be employed for the grounding of non-current carrying metal parts of electrical equipment located in a building which does not contain service equipment.

Rule 10-026 of the Canadian Electrical Code requires the grounded circuit conductor of wiring systems to be connected to a grounding electrode at any building supplied with two or more branch circuits.

Where grounding is required for equipment in such a building, we will accept as an alternative to provision of a separate grounding electrode, the installation of an overhead grounding conductor run back to the neutral bar in the service equipment.

For grounding of the non-current carrying metal parts of equipment at the building, the branch circuit neutral conductors must not be used but a separate grounding conductor must be employed and connected to the grounded point at the entry to the building when a ground is provided at the building. When an overhead ground is used, the equipment grounding wires must be connected to it at the point of entry.

It is to be noted that Rule 10-026 does not require the installation of a ground electrode at a building which does not contain service equipment if only one branch circuit is provided and the building does not house livestock. In such cases, if the building contains equipment which requires grounding, or polarized receptacles, the grounding must be provided in accordance with the above.